MEMORIAL

OF

HENRY HALL SHERWOOD,

PRAYING

The aid of Congress to enable him to perfect and secure the benefits of his invention for determining the variation of the needle, and for finding the latitude and longitude by the aid of magnetism, &c.

JUNE 15, 1838.

Referred to the Committee on Naval Affairs, and ordered to be printed.

To the honorable the Senate and House of Representatives of the United States in Congress assembled:

Henry Hall Sherwood, of the city and State of New York,

RESPECTFULLY REPRESENTS:

That he is a native of the United States, and by profession a physician; that he has long been convinced that, by the aid of magnetism, new and better methods than those now in use might be discovered for determining the variation of the needle, and for finding the latitude and longitude, both by sea and land; that, as the result of this conviction, he, for upwards of twenty years, devoted all the time which in his limited circumstances was not necessarily spent in the support of his family, to the investigation of that science, and of the nature and properties of the magnet; that in these pursuits he has made the following discoveries, hitherto, as he believes, unknown to mankind; which will render magnetism an exact science, and prove of great practical importance to mankind, viz:

1. He has magnetised a continuous iron ring, as well as a circular iron plate; a result hitherto regarded as impossible, and the practicability of which is denied in the latest and best treatises on the subject; in proof of which he refers to the work on magnetism *in the library for promoting useful knowledge*, by Dr. Roget, of London, published in 1832.

2. He finds that in the magnetised ring, as well as in the magnetised iron plate, the magnetic poles are not in the axis of the ring or plate, but at one point on the left and at another on the right of the axis; making each an angle of 23° 28′ with the axis; the same angles which the polar circles make with the axis of the earth.

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3. He finds that the magnetised ring or circular plate has two hemispheres, like the earth; and a magnetic equator; and a magnetic axis, at an angle of 23° 28″ with the axis of the ring; and a line of no variation, on which, as well as on the magnetic equator, the needle lies parallel with the axis of the ring or plate; that on the magnetic equator, the dipping needle is horizontal; that on either side of it the dip is in proportion to the distance from the equator; and that at the magnetic poles it is perpendicular.

4. In the magnetised plate and bar, he also finds the same law governing the place of the magnetic poles as the magnetic axis; connecting them makes an angle of 23° 28′ with the axis of the plate or bar.

5. In every magnet, he finds that the magnetic poles are not on the outer edge of the ring, plate, or bar, but within the edge and at the depression of 2° 35′.

6. By the magnetic ring, he has discovered the true laws of magnetic motion and influence, which have hitherto been unknown, and which are now, by the use of the ring, and of the plate, clearly and easily demonstrated.

7. By the aid of the magnetic ring, he has discovered the precise position of the magnetic poles of the earth, the existence of which has been known for a considerable time, although their true position has hitherto been the subject of continual controversy, and has not to this day been even conjectured by any writer on magnetism; and has ascertained that the magnetic poles are in the polar circles, or 23° 28′ from the poles of the earth; and that the magnetic axis makes that angle with the axis of the earth.

8. The position of the magnetic poles in the polar circle is also confirmed and established by numberless calculations founded on this fact, and furnishing results exactly true.

9. He has discovered that the magnetic poles of the earth are not stationary, but revolve in the polar circles; moving regularly from east to west round the poles of the earth; and that the period of their revolution is 666 years, wanting a few seconds, and that their annual motion is 32′ 26″.

10. He has discovered that the needle, when on the magnetic equator, always lies in the plane of the terrestrial meridian, or is parallel with the axis of the earth.

11. He has discovered that what is called *the line of no variation*, is not a winding irregular line on the earth's surface, as drawn in the latest and best nautical charts; but a great circle of the earth, or magnetic meridian, passing through the magnetic poles, as regular in its form and progress as any other great circle of the earth.

12. If a series of magnetic meridians be imagined, passing through the magnetic poles, he has discovered that the circle of no variation is that magnetic meridian which passes at the distance of 6° 28′ from the poles of the earth.

13. He has found that the circle of no variation, like the magnetic poles, is not stationary, but revolves round the earth in 666 years, and 32′ 26″ in one year.

14. He has traced the circle of no variation, and has found that that half of it which now crosses the continent of America, and which, from its cutting the arctic magnetic pole, may be denominated *the arctic semi-circle*, or *the arctic line of no variation*, on September 15th, 1837, passed near, or through, the following places, viz: Proceeding from the north magnetic pole, in latitude 66° 32′ west, longitude 93° 16′ 03″ 04‴, it traversed Hudson's

bay west of Mansfield and Southampton islands; entered James's bay between Lake Muskinaw and Abbitibbe river; ran through the Abbitibbe country; crossed the east part of the Lake Manitoulin; proceeded a little west of Lake Simcoe; passed about 1° west of Toronto; crossed the western point of Lake Ontario, and the eastern point of Lake Erie; passed about 31′ west of Fredonia, New York; about 1° east of Pittsburgh; about 2° 22′ west of the City of Washington; about 32′ west of Charlottsville; about 1° 30′ west of Richmond; about 35′ east of Raleigh, North Carolina; about 7′ west of Wilmington, North Carolina, and about 1′ west of Cape Fear. Thence it passed through the Bahama islands; cut the east end of Cuba, about 2′ west of the town of Baracoa; cut the western peninsula of St. Domingo, about 17′ west of La Vache; crossed the Caribbean sea; entered South America, about 39′ west of Point Gallinas; passed about 10′ west of the city of Maracaibo; intersected the equator in longitude 69° 09′; passed west of Buenos Ayres; crossed the east cape of Soledad, and cut the antarctic circle, in 43° 04′ west. The eastern or *antarctic semi-circle of no variation*, he has also traced in its whole progress; but from a regard to brevity omits the description of it here.

15. He has ascertained the exact angles which the circle of no variation, as well as all the other magnetic meridians, make with the terrestrial meridians, in every degree, minute, and second of latitude, and in every degree, minute, and second of longitude on the globe; and has, with great care and labor, constructed a series of TABLES, founded on the known principles of geometry and trigonometry, by which these angles are easily ascertained.

16. He has also discovered the precise angles which the magnetic axis makes with the geographical meridian, in each degree, minute, and second of the globe; and has constructed a series of tables, by which these angles may be at once determined.

He begs leave further to represent that he has invented a new instrument, called the GEOMETER, for which he has entered the caveat for a patent, in the Patent Office, and for which, at an expense of $1,600, he, more than a month since, sent out for patents to London and Paris. This instrument consists partly of a dipping needle, and partly of twelve concentric moveable circles, marked respectively with degrees, minutes, and seconds, and with corresponding tabular degrees, minutes, and seconds. Its practical use may be easily understood by any person unacquainted with the principles on which the tables are constructed, if he understands the four ground rules of arithmetic. By means of this instrument, the following important points may be easily and certainly determined:

1. The plane of the magnetic parallel of latitude of any place.
2. The plane of the magnetic meridian.
3. The dip.
4. The variation of the needle.
5. The distance of the circle of no variation, and the angle which its plane makes with the plane of the geographical meridian.
6. The angle which the magnetic axis makes with the meridian.
7. The angle which the magnetic meridian makes with the geographical meridian.
8. The longitude of the magnetic pole from London.
9. The exact latitude of any place.
10. The exact longitude of any place.

All these are ascertained without the aid of sextant, or quadrant, or chronometer, or celestial observations, on land and at sea, as easily in a cloudy or dark sky as in the clearest sunshine or starlight, and far more accurately and unerringly than by any methods now in use.

He further represents that the variation of the needle cannot be taken by any other method without a celestial observation; that it cannot be taken at sea, even in fair weather, with accuracy, in consequence of the motion of the vessel; that on land, and in fair weather, it is rarely taken with accuracy; that no observation of the latitude can be taken at sea, or on land, without fair weather; and that great mistakes are usually made at sea in calculating it; that fair weather is equally necessary for taking the longitude, whether by the chronometer or any other instrument; that attempts to determine it at sea are known to be generally fruitless; and that great errors very frequently occur, in attempts to determine it on land; that for three centuries it has been the grand desideratum of the commercial world to discover a certain method of determining the longitude; that for many years the Board of Longitude, in London, offered a reward of £20,000 sterling for this discovery, without success; that that board paid to the artist who made the best chronometer carried out by Captain Parry £10,000 sterling, and since then has offered £8,000 sterling to the person who should devise a method by which the chronometer could be used at sea with entire accuracy in discovering the longitude; and that that board gave Captain Ross £5,000 sterling for approaching so near the north magnetic pole, as 70° 6′ north latitude, and 96° west longitude, an error of 3° 34′ of latitude, and of from 3° to 4° of longitude; that owing to the impossibility of fixing a ship's exact place at sea, hundreds of American vessels are annually lost; that in 1836, as reported in the public prints, more than eight hundred were thus lost, most of them undoubtedly from this cause; that difficulties constantly arise in survey of lands from ignorance of the law of the variation of the needle; and that lawsuits are constantly originating from the same cause; that the same difficulties have arisen in fixing the boundaries between the United States and the adjacent territories, as well as between the States; and that, owing to a mistake by an engineer in determining the precise place of the 45th degree of latitude, a fort was erected on the west side of Lake Champlain, at an expense of more than half a million of dollars, which has since been found to be within the limits of Lower Canada.

He further represents, that repeated and direct attempts have been made, by several foreigners in the city of New York, to possess themselves of the entire secret of his invention and discoveries, in order, as he cannot doubt, to secure to themselves, if possible, patents in Europe, and, if not, to gain a high reward from the British Parliament, as well as any honor which might accrue from the invention and discovery; that Godfrey, a native of Philadelphia, after having invented the quadrant, explained the invention to an Englishman, of the name of Hadley, and disclosed to him his design of taking out a patent for it in England; that Hadley anticipated him in the patent and the reward, gave his name to the instrument, claimed the invention as his own, and transferred the honor of it, in the view of the world, from America to England; that, as the discoveries and the invention, of which he has spoken, are wholly his own, he alone is entitled to any profit which may accrue from them; and that, should they be thought to confer any honor, it is due only to him and to the land of his birth.

He further states that he has had the honor of explaining these discoveries, and of exhibiting the geometer to a considerable number of the members of both Houses of Congress, as he trusts, to their satisfaction; and that he hopes to have the pleasure of doing the same to the other members of the two Houses during the present week.

He further represents that he has commenced the publication of a volume, in quarto, to explain the discoveries in magnetism, as well as the nature and use of the geometer, to be accompanied with numerous plates, and attended with great expense; that the manufacture of the instrument, in order to introduce it into general use, will require a large outlay, much larger than he is able to meet, with no immediate returns; and that it is his purpose, if enabled so to do, to proceed to England and France, to secure what he conceives to be a just reward for the labors of a life successfully devoted to the welfare of his country and of mankind.

He therefore most respectfully petitions both Houses of Congress to give the premises due consideration; and if the invention and discoveries which he has recited shall appear to them of high importance and value to the people of the United States, then to enable him, by their friendly assistance, to proceed, without delay, to the accomplishment of the objects he has specified, as well as to feel that, in prosecuting them thus far, he has not jeoparded the ultimate welfare of himself and of a family dependant on his daily exertions for their support; he giving an express pledge that, for the instruments purchased for the national ships and for the service of the United States, nothing shall ever be demanded for the patent. And, as he may find in Europe that the instruments may be made with greater accuracy and on better terms, and that the work proposed, with the plates, may also be better executed *there* than *here*, he also requests that he may be authorized to import both the books and the instruments, as both are, in an important sense, a national concern, *duty free*.

With this statement of facts, he cheerfully commits himself to the justice and honor of Congress and his country.

H. H. SHERWOOD.

WASHINGTON, *June* 13, 1838.